

## IT: An analysis of Communication and Information of the Supply Productive Chain by the Nurse

**CRISTIANA FIALHO BRAZ DA SILVA** (Corresponding author)

Master Student, Nursing School  
Federal University of the State of Rio de Janeiro – Rio de Janeiro/Brazil  
&  
Nursing and Physical Education Lecturer  
College of the Future of Manhuaçu - Minas Gerais/Brazil  
E-mail: [cfialhobrazdasilva@gmail.com](mailto:cfialhobrazdasilva@gmail.com)

**ANNIBAL SACAVARDA**

Prof. Dr.  
Federal University of The State of Rio de Janeiro – Rio de Janeiro/Brazil  
Production Engineering School  
E-mail: [annibal\\_scavarda@unirio.br](mailto:annibal_scavarda@unirio.br)

**LUIZ CARLOS SANTIAGO**

Prof. Dr.  
Federal University of The State of Rio de Janeiro – Rio de Janeiro/Brazil  
Fundamental Nursing Department  
E-mail: [luisolitrio@gmail.com](mailto:luisolitrio@gmail.com)

### RESUMO

*As instituições de saúde estão cada vez mais voltando a um processo contínuo de informatização de suas variadas atividades, apresenta em seus propósitos o acompanhamento da inserção das denominadas NTICs, que tem sido um grande aliado no desenvolvimento do PE pôr permitir uma integração numa estrutura lógica de dados, informação e conhecimento para auxiliar e ser integrado no cotidiano da prática do profissional da saúde. O objetivo deste artigo é identificar e analisar, fatores que influenciam nesta estruturação dentro da cadeia produtiva de suprimento na comunicação e informação dos desafios encontrados pelo profissional enfermeiro, no uso do software. Tratando-se de um artigo conceitual, exploratório com análise da literatura. Convidando ao leitor a refletir, que não adianta investir num mais sofisticado hardware e software do mercado, se não for concentrado este valor de investimento em treinamento na busca de envolvimento do usuário na unidade hospitalar.*

**Palavras-Chaves:** *Tecnologia e informação na Enfermagem. Cadeia de suprimento na enfermagem.*

### ABSTRACT

*Healthcare institutions are increasingly turning to an ongoing process of computerization of its various activities, presents in its purpose monitoring the insertion of so-called NTICs, which has been a great ally in the development of PE putting enable integration into a structure logical data, information and knowledge to support and be integrated into the daily practice of the health professional. The purpose of this article is to identify and analyze factors that influence this structure in the chain of supply in information and communication challenges encountered by professional nurses in the use of software. Since this is a conceptual, exploratory article with analysis of the literature. Inviting the reader to reflect, that it is useless reversed a more sophisticated hardware and software in the market, if not this value focused investment in training in the pursuit of user involvement in the hospital.*

**Keywords:** *Technology and informatics in Nursing. Nursing supply chain.*

**Acknowledgment:** The authors would like to thank the help of CNPq and FAPERJ.

### 1 - INTRODUCTION

The health institutions are increasingly turning to a continuous process of computerisation of their innumerable activities, that presents as one of their objectives following-up the insertion of the so-called New Information

and Communication Technologies (NTICs), which have been a great ally in developing the Electronic Records (PE), because have allowed the integration within a logical structure of data, information and knowledge to help and to be integrated in the health practitioner's routine.

We must prepare ourselves to understand that a technological transformation is not a random result or sequence of disconnected events, on the contrary, according to Castells (2009) its construction and consequent use by society is by means of the confluence of diverse factors that carry inside determinations which mainly meet social economical and political interests.

Gadella et al (2012) says that the National Systems of Innovation (SNI) is formatted for health innovation, involving a chain of institutions within a wider approach, acquiring a coevolutionary format, but not linear, being very differentiated in the diverse "times and spaces" of development. On the political and health view concerning national health area, there is a gain in the chosen field of study, evoking to the own organization of the national States, favoring the relationships between the States and the private sectors, for its insertion in world economy.

This National Policy on Information and Informatics in Health presents a huge potential in diverse social segments through computerisation use, where provides useful information for defining strategies in the health investment politics for which also contributes for products' safeness, efficacy and quality, insumes in the services of interest to health promotion. It becomes relevant for health practitioners to use computerization in their daily records, since this eases the organization of medical appointments and reports on information given by users, moreover, it supports the process of decision making since this system when well programmed eases the assisted search for clinical records and protocols. Hannah et al. (2009)

As one example of the importance of technology applied through Informatics on information and communication as well mentioned by Cembranel et al (2013) in his study, relating the hospital organization with supply chain, he sought to raise quality data with cost reduction, as treated in the case of the tragedy placed in Santa Maria, in January, 2013, which left two hundred and forty fatal victims and approximately one hundred twenty-four injured. Those people were attended at a hospital in the interior where there was a lack of preparation from health practitioners on urgency and emergency sectors, in attending these multiple victims of fire. Therefore, the importance of the lack of standardization and operations since they are not integrated to a computerization system, which involves firemen, doctors and hospitals is stressed. Due to the lack of this support, the patients overcrowded , , em in a determined to local unit, , due to the lack of concrete parameter about how the other regional hospital units were and even the ones from the neighbor cities, in such chaotic time. Due to the lack of this operational system, it was impossible yo have a criterium on the health practitioner, that defined to where the ambulances which arrived to the hospitals must be directed. However, advices were done from hospital to hospital, by telephone to redirect the ambulances used victims' localization. Before this difficulty, these authors had the interest in creating a software which generates information on specific conduct and enables multi parameter information to the emergency professional, helping them in their decision making in each situation of urgency/emergency that in this specific case was receiving and treating patients suffering from diverse types of burns.

Since the hospitals are increasingly "departamentalised", Saha eta al (2009) affirms that the increasingly management of the supply chain is mainly niche-oriented; agreeable with each activities' development, supplying products which can be organized and framed, e.g., to meet the needs of each group of patients, more quickly.

It is expected that a hospital, whether small, medium or big size work through a technological base of communication and information faced to the integration of their departments, allowing a quicker information exchange. Toledo et al (2008) highlight that that process of the product development department (PDP), needs direct contribution of the diverse functional areas arising an integrated process of decision-making activities in each department. This communication enables the easy transport of information, bringing a positive integration between the departments and making possible the increase of this performance on information process, making an environment favorable to a good external and internal communication, in which the company (hospital) will lead satisfaction to their internal and external clients.

One of the greatest obstacles found in Informatics Technology (TI), for development of health field, regarding supply management, it is related to the own user of this hardware and software, where this person has psychological barriers related to yo the use of technology in their working daily life, without observing that as a tool to ease their work, but as a backward in their working process, as well described by Ilie et al (2009), in their

article, that studied the relationship technology versus role in medical work routine. It describes that, being a big hospital, take doctors to make their rounds in many floors in the same time fraction, favoring the written reports by these medical practitioners, due to be more accessible writing than go to the nursing sector to use a computer and yet found this terminal unavailable, because of the insufficient number of computers in the place. It is highlighted the principle of “less effort”, becoming plausible for the doctors. This study aimed exactly to assume that accessibility is an important concern in IT use adaptability that becomes a challenge to be overcome during time, by training in seeking for breaking these beliefs from users, regarding IT use in their working reality.

Therefore, after exposing this background, this study makes relevant the analysis of the factors that influence on the use of these softwares, yet available in market, on this nurse practitioner’s working routine, identifying factors of the planning of the Productive Chain of Supply in Communication and Information by the use of the software and integration of each Department of this hospital unit for this challenge.

### **1.1 - Objective**

This article aims to identify and analyze factors that influence on this planning within the productive chain of supply in Communication and Information of the challenges found by this nurse practitioner, when using this software.

### **1.2 - Research Methodology**

It is a conceptual, exploratory article, which analyzes articles published in English, Spanish and Portuguese. For the extraction of data from selected studies, we used an instrument of data collection including: periodic items, country of origin of the study, publishing year, Qualis CAPES classification B3, B2, B1, A3, A2 and A1 in the area: engineering assessment III, nursing and medicine, source of research, design and aims of research; within the theme, which is available for a complete analysis of the content. Consisted of a search in the database, accessing the Virtual Health Library (VHL)/bireme in which they were employed the following data bases: LILACS (Latin American literature and Caribbean Health Science), BDENF (nursing database) and MEDLINE (Medical Literature Analysis and Retrieval System Online). Pubmed/Medline. This data collection took place during September/October 2014.

The search was conducted by using the descriptors from DeCS (describers in Health Science): technology and information in Nursing/nursing/supply chain Communication and informatics in nursing/With the use of computers to Nursing/Supply chain communication and information in Nursing. When selecting the items found was a pre-selection based on title, followed by other filtering, for a reading and the abstracts, in order to verify the relevance of the study with the research question raised by addressing their knowledge and previous experiences in the relationship with communication and information geared toward the professional nurse.

Thus, articles were selected that obeyed the following inclusion criteria: text correlating the use of the software in the working routine of the nurse practitioner, with the other departments in terms of communication and information, between the period 2008 to 2014, texts that were available online, in English, Portuguese and Spanish, and Qualis CAPES Classification B3, B2, B1, A3, A2 and A1

For exclusion: Qualis CAPES Classification below B3; noticed the restricted access; references of studies that wouldn't treat the proposed theme; references of studies that were repeated in the databases appeared; and languages other than those proposed.

The analysis of the research was conducted by means of the articles found in online databases available to complete query content. These selected articles were read and re-read thoroughly for achieving the goal of the survey, as described by Bardin (1988), which aims, among other aspects, to deal with information from previously investigated subjects speeches about a particular subject, where it is possible the centralization of ideas, and that lead to the categorization of topics.

## **2 - RESULTS AND DISCUSSIONS**

### **2.1 - Technology on Information and Supply in Nursing**

In whole world, Nursing seeks to optimise a unified language, by using a software which enables the diagnosis to help in the process of patient assistance in a clear and concise way. However, the International Council of Nurses (CIE) that is responsible for the worldwide integration of all information and communication infrastructure on health care policies and practices, uses technology (hardware and software) to speed up its process of information through the international classification for Nursing practice (CIPE), to clearly articulate

the professional practices seeking to ease health care user in their clinical decisions, diagnosis, interventions and assessment and providing autonomy in Nursing category, through the use of that unified language Nóbrega et al (2009).

Souza et al (2009 developed their research in two distinct realities: at a public hospital, where nurses do not have electronic records for patient (PEP) in their working routine and another, private hospital, where its use is a daily routine. They found the following results: that for the use of this technology, user who is not familiarized can present a major resistance in adhering to its use, from the fact that one of the causes is out of confidence in using computers. Like other authors, they still highlight the importance of this technology which eases in a unified and systematic language the facts and clinical occurrences of each individual, providing to the nurse practitioner a more effective use in their records. It still arises the fact in which diverse professionals at the same time, at the same place or even outside hospitals, by using their personal login, can check. It is still pointed out that this technology can store diverse types of exams taken by patient, avoiding time loss by user in searching for those exams already filed as well as extra costs in exam printing, being visualized on computer screen, as also more costs spent by patient to take the same exam, if the previous is lost. It is concluded that even having obstacles due to the lack of knowledge on computer use, the health practitioner is not deprived of this technology. Therefore, it is highlighted again the importance of investing in each person's training, aiming to increase each individual's first motivation in learning this technology.

By creating new softwares which eases nurse practitioner's daily life, their use is provided for their working practice. But no system is going to meet their needs if the user do not stick to it, as a participating tool in their working process. As affirmed by BARRA ET all (2010) and KIPTURGO et al (2014), pointing out the fact that who determines the success or failure from software use are nurses' attitude effectively, being related to its access to culture in working environment, to their own practices, that generate the need to obtain information relevant to that professional's better guideline for assistance. Differently from this context, it makes people create a resistance, refusing the use of the system implanted in the institution.

When discussing the results of the following tables, derived from an analytic research, there are objectives which lead us to consider that most authors present proposal of propose software production' production in health field, seeking to ease the health practitioner's daily life, regarding the continuous concern of the production of a software that has a good appearance and good programmed scientific technical language, in order to obtain user's acceptance to the program installed at that hospital. When thinking of hardware and software installation at a hospital unit, it is more important that the hospital directors apply its investment in equipment acquisition, able to provide agility and security to use, being an important tool in the process of clinical decision making, as well as users' training, in their own time, causing the user to use this technology as a whole, as analyzed in each table below:

**Table 1:** it describes that the difficulties found in the construction of the operational system was due to the lack of a language unified model, representing a difficulty to operate the system; even if the program installed was assigned to ease the diagnosis made by nurse, it becomes low practical due to the lack of a unified language. NOBREGA et al, who although do not describe the difficulty or ease found in the use of the system by nurse, clarify the importance of the Informatics Technology and the existence of a system of classification and language unification.

Author's Publishing Year	Paper's Title	Research's Objective	Difficulty Met	Ease Met	There is no report on software from nurse
NÓBREGA, M. M. L.; GARCIA, T. R. Sep.-Oct. 2009	International Classification for Practice on Instrumental Technology Nursing for Professional Practice	To discuss about the historical development of classification systems in Nursing, with emphasis on CIPE® as a an instrumental technology for professional practice.			It reports the importance of IT in the system of classification and language unification, but does not tell a bout its efficacy in professional practice.

LABBADIA, L. L.; D'INNOCENZO.M.; FOGLIANO, R. R. F.; SILVA, E. F.; QUEIROZ, R. M. R. M.; CARMAGNANI, M. I. S.; SALVADOR, M. E. 2011	Computerized System for Management of Nursing Assistance Indicators of the Hospital São Paulo	This work aims to describe the stages of the construction of the Computerized System for Management of Nursing Assistance Indicators of the Hospital São Paulo	The programming of the SIE- HSP represented a challenge in terms of development, because of the lack of computerized models that provided a free database of operational errors and reflected the reality of the institution.	The program implanted seeks to facilitate the process of nursing diagnosis on nursing indicators. But as the author even reports, he will will have to have further studies to evaluate and prove their effectiveness, and analyze their use by the nursing staff in relation to the indicators in the work process.	
--	--	--	--	--	--

**Table 2:** Describes that the difficulty encountered, the lack of agility from the operational system, it compromises the smooth running of the worker's process in their patient care; still presents a difficulty in the records and information retrieval taking the nurse practitioner to a dissatisfaction regarding the use of the computer. Even it emerges the fact that often the operating system installed in their work unit has software for management and administrative purposes only, not having a clinical language that helps in the process of work on assistance. OLIVEIRA 2010 addresses that in the supply chain are found values that reveals the linkages that are expected by the user and must be consistent, complementary and synchronized in order to maximize the level of service expected. Therefore, if the system installed in the hospital does not support these attributes, they possess technology that leads it to be underutilized in the work unit by the user, which consequently leads to a loss of hospital daily significant monetary value. Ease already found, it is reported how this system allows the use of expected form, with on-line information presented, being an important tool in their daily work, by providing assistance in the emergence of new epidemiological situations, becoming crucial to the nurses' decision-making; reporting that has become an indispensable tool in your work process.

Authors' Publishing Year	Paper's Title	Research's Objective	Difficulty Met	Ease Met	There is no report opinion on software from nurse
SOUZA, A. K. D.; SANTOS, S. R. Jul-Sep. 2009	Information Records in Nursing According to Nurses' Understanding	To know nurses' understanding on electronic and manual records and identify the positive and negative aspects of the use of those records.	It describes that most people recognize that assistance is harmed by the use of computers, that require much time for practitioners to record. The information	Integrated systems presuppose integrated services and organizations and require, primarily, prepared professionals. Soon, these issues often result in critical	

			for solely managerial purposes, do not represent in a general way, a challenge to adopt PE. However, the difficulty is in clinical information record, control and recovery, as well as in organizational nature and nurses' conventional works.	barrier to the development and adoption of a PE.	
GODOY, J. S. M; GONÇALVES, L.S.; PERES, A. M.; WOLFF, L.D.G. Jan. – Mar. 2012	The use of the Electronic Records by nurses in Basic Units of Brazilian Health	General: Identify the perceptions of nurses of basic health units assistance on using the PE System in their professional practice. Specific: describe the PE used in basic health units; introduce the potentialities and difficulties perceived by nurse practitioners in the system data processing; and, pointing out that nurses utilize strategies due to the difficulties presented in the use of PE.	The lack of agility of the system may compromise the good patient care, leading to dissatisfaction of professional and who is being served by him. As a tool for planning and decision-making, the PE must identify individual and collective problems of population's sanitary scenario; provide element and the decision-making process.	It is the system as a tool to access the information, which arise with the new epidemiological situations, can be decisive for the decision making. It has become an indispensable tool for the achievement of the nursing process.	

**Table 3:** In this context is not found report difficulties or facilities by the user, as in most articles involving the development of a software in order to organize a hospital environment; this already brings concept already described in the first table when emphasizing that one of the consequences in the under-utilization of the deployed software and lack of standardization in the nursing vocabulary, which leads to the nurse to practice often intuitive actions in your work routine, making the nurse just explore the information system to describe their practices. The other author in his article raises evidence of feelings of nurses in the use of computers in a private and public hospital. Stresses that the acceptance of these nurses to the use of information technology is directly related to the age, educational level, experience prior to using the computer and the years of experience in the profession. And this pleasure of this technology and to incorporate as a tool of work also relates also to

these outside factors described. OLIVEIRA (2010) says that in the hospital unit that the supply chain must be worked up the identification of individual values, establishing competence in relations between the primary and secondary members, performing through existing interactions between the members, promoting training and technology interaction the user, taking advantage of the initial motivation that this user has to be taught to make use of this technology in your work environment.

Authors' Publishing Year	Paper's Title	Research's Objective	Difficulty Met	Ease Met	There is no report opinion on software from nurse
PARRO, M. C.; ÉVORA, Y. D. M. Jul – Sep. 2011	Development of Software for information organization of hospital occupational health service.	Develop a software for the Organization of data of workplace accident with biological material, epidemiological characterization and monitoring of clinical evolution of the population in the planning of nursing care in Occupational Health.			As this is a research for software creation, a little concept on the use of this system is found. Therefore, the difficulties in terms of standardization of nursing vocabulary and the fact that actions are often planned more intuitively, make nurse little explore information systems to describe their practices.
KIPTURGO, M. K.; KIVUTI-BITOK, L. W.; KARANI, A. K.; MUIVA, M. M. 2014	Attitudes of nursing staff towards computerization: a case of two hospitals in Nairobi, Kenya	The objective of this study was to document and compare the attitudes of nurses facing the informatization among nurses with and without experience with the computer and analyze the factors that influence their attitudes.			It highlights the concepts of users' feelings about computer use. In a private and public hospital (which had not PE yet). It is verified in this survey that the acceptance from the nurses, the use of information technology is related to: age, educational level, previous experience with computer use and years of professional experience, highlighting the fact that the young nurse has demonstrated a greater pleasure in using this technology, by incorporating it as a tool in your plan of care. But it does not remain without rising the fact that all nurses have a positive attitude toward computerization.

**Table 4:** This author describes a technology applied to bedside, where the data were all structured, in order to lead to the nurse professional to a diagnostic information from bedside; this technology provided to the user an association of knowledge and ideas sequentially, favoring nursing interventions necessary for each patient. Porter (2010) relates that each patient reaches a value in health care, where all people and all equipment are responsible in providing this assistance to this patient, being considered as service providers and suppliers, with a single order where the person take advantage of health care. Therefore it is to use a treatment cycle for the individual patient, which in turn leads to a higher expenditure when using some services and on the other hand leads to reduction of time and the need for other services. The difficulties encountered by the user highlights that this technology shows a record on inadequate information besides presenting a difficulty of access and in recovering the patients' information and has a layout that brings discomfort to the user in the handling of this technology. It must be employed a value chain, which is a series of activities that corresponds to obtaining the higher performance of this device, seeking to provide a comfortable product. OLIVEIRA (2010):

Authors' Publishing Year	Paper's Title	Research's Objective	Difficulty Found	Ease Found	There is no reported opinion on software from nurse
BARRA, D. C. C.; SASSO, G. T. M. D. Jan-Mar 2010	Bedside Mobile Technology: Computerized Nursing Process in Intensive Therapy from CIPE ® 1.0	Describes the evaluation of the criteria for Ergonomics and usability of the PE in mobile computerized technological device type Personal Digital Assistant (PDA) from ICNP ® 1.0.	Extensive information; such perception from has also been observed in studies that examined the quality of the documentation of the electronic medical record and detected that the potential for the inappropriate information registration, the difficulty of access and retrieval of information from patients are the main causes for concern of the professional. Difficulties in the category of computerized system interface for the appearance of screens and visual comfort for handling the system. It was realized during the period of data collection and on the number validated Diagnostics and interventions, that nurses did not present difficulties in the use of ICNP ®.	The way the data was structured, i.e., evaluation, diagnosis and interventions, will meet the logic of an information system, where the given selected, from the client's clinical condition, generates an informational and harness, sequentially, promotes knowledge, once establishing an association of ideas for decision-making, namely, nursing interventions required specifically to each customer. This association/relationship established by computerized PE steps gives nurses the action by means of intervention, showing thus the reasoning behind the knowledge acquired during their implementation.	



**Table 5:** this table treats another article on the creation of software where there is no report of opinion on software from nurse, more particularly in this article that the software was created with the participation of some nurses involved in clinical practice and management of hospital where it would be deployed this system. In this article the author raises the fact of importance effective on participation of nurse in this building, in relation to motivation and acceptance of the new communication and information system implemented in your work unit, making them aware of the use in their working life. OLIVEIRA (2010) points out the importance of the process be integrated within the supply chain, operating since the first supplier's supplier to the last customer's customer, being inserted the return of products and materials on its reverse flow of production. Unfortunately this study does not have this return because it is a creation of this software in partnership of opinion. However, this relationship of users' credibility and acceptability with this system formed in partnership is as suggestion for further studies as a research proposal, with the purpose of seeking arguments relevant to such a process in the construction of a software.

Authors' Publishing Year	Paper's Title	Research's Objective	Difficulty Found	Ease Found	There is no reported opinion on software from nurse
SANTOS, S. R. 2010	Informatics in Nursing: Development of free software for assistance and managerial application	Develop an informatics system in nursing, for assistance and com management of nursing service at the Medical Clinics of the Hospital Universitário Lauro Wanderley			As it is a research on software creation, that will be applied to assistance and management, there is no concept on system Therefore, the author concludes, highlighting the fact that the nurses who actively took part in the construction of this software, got aware of the importance of the use of this information software as a helper in their working routine.

### 3 - FINAL CONSIDERATIONS

Since it analyzes the literature, this article proposes to reflect on the use of software in information and communication within the supply productive chain, seeking for challenges found by the nurse practitioner. It highlighted that most of the softwares found available in market is for construction; for management, there are still systems with difficulties in interpreting user's usage, giving him less support in their working routine. There are also few softwares with unified and systematized assigned to help nurses in assistance, to help in clinical diagnosis, where these characteristics are summarized in all presented tables. Another point analyzed is the user's less training and commitment with communication and information technology installed in the hospital institution, causing this user population the subuse of the available system as a working tool.

In this context of information technology and production engineering, the article cooperates with this presentation on the difficulties found, systematized, aiming to contribute with the identification of the problems found in the relationship between the software's producer and nurse user within a hospital environment, making easy this communication in seeking for a larger acceptance from these health practitioners or using the technology as a communication and information tool.

We suggest the improvement of these softwares already in market, in a unified and systematized language, according to CIPE@1.0, for assistance, as well the creation of new softwares for the use of techniques, helping them in clinical diagnosis. Concerning the softwares for administrative field, these must have a unified language to effectively contribute to assistance & management communication, where all these languages also must be present in the other departments within the hospital environment and all staffs involved. We invite the reader to again think that it is not useful to invest in a more sophisticated tradable hardware and software, if this does not concentrate value focused on investment in training seeking for user's commitment in hospital unit. We believe that is there is a good investment for these human and technological values, IT will definitely develop as a working tool for nurse practitioner.

## REFERENCES

- CASTELLS, M.A. *Sociedade em Rede. A era da Informação: Economia, sociedade e cultura*. 6 ed. Volume I, São Paulo: Paz e Terra, 2002. *A Sociedade em Rede*. Volume I, São Paulo: Paz e Terra, 2009.
- GADELHA, C.A.G.; VARGAS, M.A.; MALDONADO, J.M.S.; BARBOSA, P.R. *O Complexo Econômico-Industrial da Saúde no Brasil: dinâmica da inovação e implicação para o Sistema Nacional de Inovação em saúde*. Revista Brasileira de Inovação, Campinas (SP), 12 (2), Jul-Dez, 2013 pp.251-282.
- CEMBRANEL, P.; CARMO, A.J.R.R.S.; LOPES, L.F.D. *Gestão de Operações e de Cadeia de Suprimentos da Saúde em Situações de Urgência: Estudo de Caso da Tragédia em Santa Maria*. Simpoi Anais, 2013.
- HANNAH, Kathryn J.; BALL, Marion J.; EDWARDS, Margaret J. A. *Introdução à Informática em Enfermagem*. 3 ed. Porto Alegre: Artmed, 2009. 388 p.
- ILIE, V.; SLYKE, C. V.; PARIKH, M. A.; COURTNEY, J. F. *Paper Versus Electronic Medical Records: The Effects of Access on Physicians' Decisions to Use Complex Information Technologies*. Journal Compilation Decision Sciences Institute v.40 n.2, May, 2009.
- NÓBREGA, M. M. L.; GARCIA, T. R. *Classificação Internacional para a Prática de Enfermagem: Instrumental Tecnológico para a prática profissional*. Revista Brasileira de Enfermagem REBEn, Brasília (DF), 62 (5), Set-Out; 2009, pp.758-61.
- LABBADIA, L. L.; D'INNOCENZO, M.; FOGLIANO, R. R. F.; SILVA, E. F.; QUEIROZ, R. M. R. M.; CARMAGNANI, M. I. S.; SALVADOR, M. E. *Sistema Informatizado para Gerenciamento de Indicadores da Assistência de Enfermagem do Hospital São Paulo*. Revista Escola Enfermagem USP, São Paulo, 45(4), 2011, pp.1013-7
- SOUZA, A. K. D.; SANTOS, S. R. *Registro de Informação em Enfermagem na Concepção de Enfermeiros*. Sistema Eletrônico de Revista - Cogitare Enfermagem Universidade Federal do Paraná UFPR, Paraná, 14(3), Jul/Set, 2009, p.527-34.
- PARRO, M. C.; ÉVORA, Y. D. M. *Desenvolvimento de Software para a organização da informação de um Serviço de saúde ocupacional hospitalar*. Revista Eletrônica de Enfermagem UFG, São Paulo, Jul/Set, 2011; 13(3):386-94. Available from: <http://www.fen.ufg.br/revista/v13/n3/v13n3a03.htm>.
- KIPTURGO, M. K.; KIVUTI-BITOK, L. W.; KARANI, A. K.; MUIVA, M. M. *Attitudes of nursing staff towards computerisation; a case of two hospitals in Nairobi, kenya*. Medical Informatics & Decision Making BMC. 2014. Available from: <http://www.biomedcentral.com/1472-6947/14/35>
- SANTOS, S. R.; *Informática em Enfermagem: Desenvolvimento de Software livre com 44(2):295-301*. Available from: [www.ee.usp.br/reeusp/](http://www.ee.usp.br/reeusp/)
- BARRA, D. C. C.; SASSO, G. T. M. D.; *Tecnologia Móvel à Beira do Leito: Processo de Enfermagem Informatizado em Terapia Intensiva a Partir da CIPE 1.0®*. Texto Contexto Enfermagem, Florianópolis, Jan-Mar, 2010; 19(1):54-63.
- PORTER, M. E.; *What Is Value in Health Care?*. The new England Journal of Medicine, n engl j med 363;26 nejm.org december 23, 2010.
- OLIVEIRA, J. B.; LEITE, M. S. A.; *Modelo analítico de suporte à configuração e integração da cadeia de suprimentos*. Gestão & Produção, São Carlos - SP, 2010 17(3):447-463.
- BARDIN, L. *Análise de Conteúdo*. Tradução Luiz Antero Reto Augusto Pinheiro, Lisboa: Setenta, 1988.